

were the same as Linné's species (*T. perversus*), and belonged also to the genus *Clausilia*, and because the *T. bidens* of Montagu was not the Linnean species of the same name, Pulteney's name of *nigricans* should be adopted as being older than that of Draparnaud. But at that time I had no opportunity of consulting the original edition of Pulteney, which appeared in 1799; and I concluded that the second edition (1813) recapitulated the specific names given in the original edition. I subsequently found out my mistake. The present species is the *Turbo perversus* of Pulteney, 1799; and that name is prior to *rugosa*. *T. perversus*, Linné, is the type of the genus *Balia*. The specific name *nigricans* was first published by Maton and Rackett in 1804; Draparnaud's name *rugosa* dates from 1801. See Brit. Conch. i. pp. 278 and 280.

*Valvata piscinalis*, Müller.

Mr. Groves has generously presented me with a reversed or sinistrorsal specimen from Sunbury. This kind of monstrosity occurs in probably every species of turbinated or spiral univalves, as well as in some bivalves.

XLII.—“On the Willemoesia Group of Crustacea.”

By the Rev. A. M. NORMAN.

MR. SPENCE BATE has a paper on a very interesting series of new Crustacea, from the ‘Challenger’ expedition, in this month’s ‘Annals.’ I do not see my way at present, however, to acquiescing in his conclusions, and therefore venture to ask him to give us some further information.

1. Are his genera *Pentacheles* and *Willemoesia* any thing more than the *other sex* of *Polycheles*? Has not my friend *mistaken sexual for generic characters*? Has he male and female of any *Polycheles* or any *Pentacheles*? and if so, will he let us know how these sexes are distinguished? Judging from his descriptions, I should say that *Polycheles Helleri* and *Pentacheles euthrix* are the two sexes of the same species. Can he prove that they are not?

Two Crustacea dredged by the ‘Porcupine’ expedition of 1870 off the Spanish coast are before me. I consider them male and female of *Polycheles typhlops*, Heller; but the one is, according to Bate, a member of another genus (*Pentacheles*) differing from *Polycheles* in having the last pereopods chelate, a deeper notch on each side of the front of the carapace, and

slight diversity in the lateral and dorsal spiny adornments of the carapace\*. These are the only two specimens I have seen; my conclusion that their difference is sexual *may* be wrong. Can Mr. Bate *prove* it to be so †?

2. The eyes. Eyes are things to see with. Has *Polycheles* such organs? Mr. Spence Bate objects to my friend Prof. Heller saying that the eyes are rudimentary: have lenses then been found? There will not be space in the 'Annals' of November to go into this matter, nor have I time to do so. It will suffice to say, that it were to be wished that Mr. Bate had lettered the figures of the plate to have made them more clear; I confess to difficulty in understanding the drawings. The organ he describes is clearly not the same as that which Heller speaks of when he writes, "Distinct eyes are not present, but on the bases of the peduncle of the inner antennæ one observes on both sides a small round black spot as an indication of an organ of sight."

3. Is *Polycheles* nearly related to *Alpheus*? I cannot find the slightest sign of such relationship. The mouth-organs, those important elements in the classification of the Crustacea, are wholly different; but the mandible of *Polycheles* is not unlike that of *Astacus*, with which genus *Polycheles* was compared by Heller. Mr. Bate mentions two points of resemblance to *Alpheus*: 1st, that the embryos of both have "large and distinctly pedunculated eyes," a character which, I take it, is not very rare among the embryos of the Macrurous Crustacea! 2nd, *Alpheus* is spoken of as in "its adult condition burrowing in the mud of the sea-bottom," and *Willemoesia*, "I believe, burrows in the soft mud of the deep-sea bottom. This is borne out by the contents of the stomach,

\* Had Willemoes-Suhm been acquainted with the genus *Polycheles*, he would never have established the genus *Willemoesia*. No doubt Heller's work was not in the 'Challenger' library; but there must have been the 'Porcupine' Report of 1870; and had he looked there he would have found that I had recorded *Polycheles typhlops* as taken off the Spanish coast (Station 9), the name of which is peculiarly suggestive. Mr. Bate seems also to have overlooked the circumstance that *Polycheles typhlops* had been found in the Atlantic, as he only gives the Mediterranean as its habitat.

† There is another case, however, in which Mr. Bate persists against proof in maintaining a genus founded on mere sexual characters. In the 'Annals' of May he describes (vol. v. p. 411) a *Lestrigonus spinidorsalis*; but all other carcinologists are, I believe, agreed that *Lestrigonus* is simply the male of *Hyperia*; and I have myself paired the British species described by Bate and Westwood (see Brit.-Assoc. Report, 1868, p. 286). I may add that the second crustacean described in the May number (*Diastylis bimarginatus*, Bate) is my *Diastylis spinosa* (Brit.-Assoc. Report, 1868, p. 271), as will be obvious to any one comparing the descriptions.

which I found to be full of the remains of the structures found in the *Globigerina*-ooze." The statement that *Alpheus* burrows in the mud is new to me. Its structure seems eminently unfitted for burrowing; and I have watched the habits of *Alpheus megacheles* (Hailstone), of which I have found large numbers in rock-pools and among rocks in the Channel Islands, but never a specimen burrowing in the sand. Again, the whole structure of *Willemoesia*, compared with *Scyllarus* and other Crustacea of kindred form, seems to suggest that it is a swimmer and crawler, not a burrower; and it will be obvious to any one who knows what the bed of the Atlantic is like, that there is no need that *Willemoesia* should burrow in order to obtain possession of "structures found in the *Globigerina*-ooze."

4. The relationship to *Eryon*. The connexion of *Polycheles* with *Eryon* is very close. A glance at Dr. Woodward's admirable restoration of the Liassic *Eryon barrovensis*, M'Coy\*, and a comparison of it with figures or specimens of the since-discovered *Polycheles*, are sufficient to indicate the very near and most striking relationship. The only differences visible are the supposed presence of distinct eyes, and the absence of a scale attached to the peduncle of the inner antennæ; add to these the fact that Quenstedt thought that he had observed palpi at the base of the gnathopods in *Eryon*, and we have the sum of the apparent differences between the two genera. Dr. Woodward has most kindly, in accordance with a request from me, examined both fossils and drawings of *Eryon* on the above points. In reply, I have received the following important notes from that excellent fossil carcinologist:—

"(1) I have not observed a palp at the base of the gnathopods in *Eryon*†.

"(2) The inner antennæ have no scale on the inner side; but the extremities of the maxillipeds, which are *round*, might easily be mistaken for a scale.

"(3) The eye in my restoration (of *E. barrovensis*) should have been *less pronounced*, as, although I have little doubt of its position, it has never been positively determined. I *think* it can be seen on one side of Mr. Brodie's specimen, and on both sides of *Eryon (Coleia) antiquus*, Brodp. sp. I cannot see the eyes in *Eryon crassichelis*, H. Woodw."

The only marked character, therefore, which is unques-

\* Woodward, Quart. Journ. Geol. Soc. vol. xxii. 1866, pl. xxv. fig. 1.

† The organ which Quenstedt thought might be a palp of the gnathopods was probably one of the 2nd or 3rd maxillipeds out of its place. Both these in *Polycheles* are palpiform and might easily lead to the mistake.—A. M. N.

tionably substantiated to distinguish the Jurassic and Silurian genus *Eryon* from the recent *Polycheles* is that in the latter, but not in the former, the inner antennæ are furnished with a scale on the inner margin. This is a point to which attention has not been previously directed; but I think it affords sufficient ground for keeping the genera distinct.

With respect to the chelation (as in *Pentacheles*) of the last pereopods in *Eryon*, Dr. Woodward writes to me:—"The hind foot seems to be simple, not chelate—as far as the specimens before me enable me to form an opinion, certainly. I thought I detected an indication of the last foot being chelate (*minutely so*) in a Solenhofen *Eryon*; but it might be due to fossilization."

XLIII.—*Studies on Fossil Sponges*.—II. *Lithistidæ*.

By KARL ALFRED ZITTEL.

[Continued from p. 341.]

*Rhizomorina* (*continued*).

POMELIA, Zitt.

(*Recent.*) Sponge from clavate to cylindrical, short-stalked, attached by a broad base. Vertex convex, with a pit-like depression, in which there are several small circular apertures of vertical tubes which traverse the sponge-body. Isolated pits of the same kind with tubular canals on the sides. Surface very regularly furnished with fine pores. Skeleton formed of short, curved, rather thick, branched corpuscles, covered all over with processes, arranged in trains, the forked ends of the branches being closely interwoven. Corpuscles at the surface of the same form as those of the interior, but no true surface-structures present in the specimen.

The genus, which is named after M. Pomel, is very nearly related in external appearance to various sponges from Oran referred by Pomel to *Jerea*, *Polyjerea*, *Marisca*, and *Jereopsis*, some of which probably approach this genus more nearly than the Cretaceous forms of *Jerea* and *Jereica*. The sponge described is from Florida, and was received from Prof. O. Schmidt under the name of *Corallistes? polydiscus*.

JEREICA, Zitt.

*Jerea* p. p., auct. ; *Polyjerea* p. p., auct.  
*Spumispongia* p. p., Quenst.

Sponge simple or compound, cylindrical, top-shaped, clavate,  
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